Amendments to the Claims

56-65. (Canceled)

66. (Currently Amended) ~~The passive system of Claim 65,~~ A passive system for locating a transmitter, said transmitter producing a transmitter signal of a known frequency and known modulation scheme, said system comprising:

at least one antenna array having a first antenna element, a second antenna element, and a third antenna element, said first antenna element being operable for receiving a first received signal from said transmitter, said second antenna element being operable for receiving a second received signal from said transmitter, said third antenna being operable for receiving a third signal from said transmitter; and

electronic circuitry for said antenna array to determine a first phase difference and a second phase difference between said first received signal, said second received signal, and said third received signal, said electronic circuitry being operable for utilizing said first phase difference and said second phase difference for determining location information related to a vector oriented in a direction of said transmitter with respect to said at least one antenna array, wherein said electronic circuitry comprises:

a spread spectrum receiver with a first receiver channel for processing said first received signal from said first antenna element, a second receiver channel for processing said second received signal from said second antenna element, and a third receiver channel for processing said third received signal from said third antenna element; and

a first finger for said first receiver channel, a second finger for said second receiver channel, and a third finger for said third receiver channel, each of said first

finger, said second finger, and said third finger being operable for performing a Fast Walsh Transform to determine a winning Walsh symbol based on magnitude and not phase of a Walsh vector.

67-69. (Canceled)

70. (Currently Amended) ~~The method of Claim 69, wherein the following:~~ A method for passively detecting the location of a transmitter, said transmitter being operable for transmitting a transmitter signal, said method comprising:

receiving said transmitter signal with a first antenna array comprising a first antenna element that produces a first received signal, a second antenna element that produces a second received signal, and a third antenna element that produces a third received antenna signal, and wherein said transmitter signal has a known frequency and a known modulation scheme;

determining a first phase difference and a second phase difference between said first received signal, said second received signal, and said third received signal;

utilizing said first phase difference and said second phase difference to determine location information related to a first vector in a direction of said transmitter with respect to said first antenna array, wherein said first phase difference is identified by a symbol Φ_1 and said second phase difference is identified by a symbol Φ_2, wherein said first vector is defined as $(\sin\theta_1\cos\phi_1,\sin\theta_1\sin\phi_1,\cos\theta_1)$, wherein said location information is determined by using the equations $\phi_1 = \arctan\left(\frac{\Phi_2}{\Phi_1}\right)$ and $\theta_1 = \arcsin\left(\frac{\sqrt{\Phi_1^2 + \Phi_2^2}}{\pi}\right)$;

receiving said transmitter signal with a second antenna array spaced from said first

antenna array by a known distance, said second antenna array comprising a fourth antenna element that produces a fourth received signal, a fifth antenna element that produces a fifth received signal, and a sixth antenna element that produces a sixth received antenna signal;

determining a third phase difference and a fourth phase difference between said fourth received signal, said fifth received signal, and said sixth received signal, wherein ~~and~~ said third phase difference is identified by a symbol Φ_3 and said fourth phase difference is identified by a symbol Φ_4, wherein said second vector is defined as $(\sin\theta_2\cos\phi_2,\sin\theta_2\sin\phi_2,\cos\theta_2)$, wherein said additional location information is determined by using the equations $\phi_2 = \arctan\left(\frac{\Phi_4}{\Phi_3}\right)$ and $\theta_2 = \arcsin\left(\frac{\sqrt{\Phi_3^2 + \Phi_4^2}}{\pi}\right)$; and

utilizing said third phase difference and said fourth phase difference to determine additional location information related to a second vector oriented in a second direction of said transmitter with respect to said second antenna array.

71-79. (Canceled)

80. (Currently Amended) ~~The method of Claim 79, further comprising~~ A method for passively detecting the location of a transmitter, said transmitter being operable for transmitting a transmitter signal, said method comprising:

receiving said transmitter signal with a first antenna array comprising a first antenna element that produces a first received signal, a second antenna element that produces a second received signal, and a third antenna element that produces a third received antenna signal, and

wherein said transmitter signal has a known frequency and a known modulation scheme;

determining a first phase difference and a second phase difference between said first received signal, said second received signal, and said third received signal;

utilizing said first phase difference and said second phase difference to determine location information related to a first vector in a direction of said transmitter with respect to said first antenna array;

receiving said transmitter signal with a second antenna array spaced from said first antenna array by a known distance, said second antenna array comprising a fourth antenna element that produces a fourth received signal, a fifth antenna element that produces a fifth received signal, and a sixth antenna element that produces a sixth received antenna signal;

determining a third phase difference and a fourth phase difference between said fourth received signal, said fifth received signal, and said sixth received signal;

utilizing said third phase difference and said fourth phase difference to determine additional location information related to a second vector oriented in a second direction of said transmitter with respect to said second antenna array;

providing a local oscillator which is frequency locked with respect to said transmitter frequency but not phase locked with respect to said transmitter frequency;

processing said first received signal, and said second received signal, and said third received signal in a spread spectrum receiver;

downconverting and despreading said first received signal, said second received signal and said third received signal in said spread spectrum receiver;

tracking multiple transmitter paths of said first received signal, said second received signal, and said third received signal;

separately time multiplexing said multiple transmitter paths for each of said first received signal, said second received signal, and said third received signal;

indexing multipath components for said first received signal, said second received signal, and said third received signal with respect to timing of a locally generated PN sequence;

comparing an indexed multipath signal of said first received signal to a corresponding indexed multipath signal of said second received signal and a corresponding indexed multipath signal of said third received signal to produce a multipath comparison;

utilizing said multipath comparison to determine said first phase difference and said second phase difference; and

storing a plurality of modulation symbols, and performing a Fast Walsh Transform on said plurality of modulation symbols to determine a winning symbol.

81. (Currently Amended) The method of Claim 80, further comprising[[.]] comparing said winning signal to said plurality of symbols to determine a signal to noise ratio.

82. (Previously Added) The method of Claim 81, further comprising utilizing said signal to noise ratio to determine whether a local PN-generator is aligned with respect to said transmitted signal.

83-84. (Canceled)

85. ~~The method of Claim 83, further comprising~~ A method for a passive system operable for determining location characteristics of a plurality of moveable transmitters, each of said

plurality of moveable transmitters producing a transmitter signal, each of said plurality of moveable transmitters having a known transmitter frequency and known transmitter modulation scheme, said system comprising:

providing a plurality of receivers spaced apart wherein each of said plurality of moveable transmitters is receivable by at least one of said plurality of receivers;

providing each receiver with an antenna array having three separate antenna elements;

determining two transmitter signal phase shifts at said three separate antenna elements with respect to a first moveable transmitter and a first receiver;

utilizing said two transmitter signal phase shifts to determine information related to a vector oriented in a first direction of said first moveable transmitter with respect to said first receiver; and

utilizing a receiver generated PN signal to determine a distance from said first receiver to said first moveable transmitter, and utilizing said distance with said information related to said first direction to determine a position of said first moveable transmitter.

86. (Canceled)

87. (Currently Amended) ~~The method of Claim 83, further comprising~~ A method for a passive system operable for determining location characteristics of a plurality of moveable transmitters, each of said plurality of moveable transmitters producing a transmitter signal, each of said plurality of moveable transmitters having a known transmitter frequency and known transmitter modulation scheme, said system comprising:

providing a plurality of receivers spaced apart wherein each of said plurality of moveable transmitters is receivable by at least one of said plurality of receivers;

providing each receiver with an antenna array having three separate antenna elements;

determining two transmitter signal phase shifts at said three separate antenna elements with respect to a first moveable transmitter and a first receiver;

utilizing said two transmitter signal phase shifts to determine information related to a vector oriented in a first direction of said first moveable transmitter with respect to said first receiver; and

obtaining a possible path of travel of said first moveable transmitter, and utilizing said first direction and said possible path of travel for determining a position of said first moveable transmitter.

88-89. (Canceled)

90. (Currently Amended) ~~The method of Claim 83,~~ A method for a passive system operable for determining location characteristics of a plurality of moveable transmitters, each of said plurality of moveable transmitters producing a transmitter signal, each of said plurality of moveable transmitters having a known transmitter frequency and known transmitter modulation scheme, said system comprising:

providing a plurality of receivers spaced apart wherein each of said plurality of moveable transmitters is receivable by at least one of said plurality of receivers and wherein each of said plurality of receivers comprises a noncoherent receiver;

providing each receiver with an antenna array having three separate antenna elements;

determining two transmitter signal phase shifts at said three separate antenna elements with respect to a first moveable transmitter and a first receiver; and

utilizing said two transmitter signal phase shifts to determine information related to a vector oriented in a first direction of said first moveable transmitter with respect to said first receiver.

91-93. (Canceled)

94. (Currently Amended) ~~The method of Claim 91, further comprising~~ A method for modifying an existing communication system comprising a plurality of moveable transceivers and a plurality of affixed transceivers to provide location information related to said plurality of moveable transceivers, said existing communication system being operable for transmitting a data modulated signal via an electromagnetic wave from said plurality of moveable transceivers to said plurality of affixed transceivers, said electromagnetic wave having a known wavelength, a known transmitter frequency, and a known transmitter modulation scheme, said method comprising:

mounting an antenna array at each of said affixed transceivers, each antenna array having three antenna elements spaced apart by an integer times one-half of said wavelength, said three antenna elements being operable for producing a first received data modulated signal, a second received data modulated signal, and a third received data modulated signal in response to said data modulated signal from a first moveable transceiver of said plurality of moveable transceivers;

providing a receiver with each antenna array for receiving said data modulated signal from said first of said plurality of moveable transceivers, said receiver being operable for measuring a first phase difference and a second phase difference between said first received data modulated signal, said second received data modulated signal, and said third received data modulated signal;

determining information related to a vector oriented in a first direction of said first moveable transceiver from said first phase difference and said second phase difference;

utilizing said information related to said first direction for determining a first location of said first moveable transceiver; and

determining a distance from said receiver to said first moveable transceiver, and determining said first location of said first moveable transceiver by utilizing said first direction and said distance.

95. (Canceled)

96. (Currently Amended) ~~The method of Claim 91,~~ A method for modifying an existing communication system comprising a plurality of moveable transceivers and a plurality of affixed transceivers to provide location information related to said plurality of moveable transceivers, said existing communication system being operable for transmitting a data modulated signal via an electromagnetic wave from said plurality of moveable transceivers to said plurality of affixed transceivers, said electromagnetic wave having a known wavelength, a known transmitter frequency, and a known transmitter modulation scheme, said method comprising:

mounting an antenna array at each of said affixed transceivers, each antenna array having three antenna elements spaced apart by an integer times one-half of said wavelength, said three antenna elements being operable for producing a first received data modulated signal, a second received data modulated signal, and a third received data modulated signal in response to said data modulated signal from a first moveable transceiver of said plurality of moveable transceivers;

~~wherein said step of providing a receiver further comprises~~ providing a noncoherent receiver with each antenna array for receiving said data modulated signal from said first of said plurality of moveable transceivers, said receiver being operable for measuring a first phase difference and a second phase difference between said first received data modulated signal, said second received data modulated signal, and said third received data modulated signal, and wherein said receiver comprises a local oscillator such that ~~a~~ said local oscillator of said receiver has a local oscillator frequency which is frequency locked with respect to said transmitter frequency but which is not phase locked with respect to said transmitter frequency;

determining information related to a vector oriented in a first direction of said first moveable transceiver from said first phase difference and said second phase difference; and

utilizing said information related to said first direction for determining a first location of said first moveable transceiver.